Five-Year Review Report

First Five-Year Review Report for the Lemon Lane Landfill Monroe County, Indiana June 2005

PREPARED BY:

The United States Environmental Protection Agency
Region V
Chicago, Illinois

Approved by:

Richard C. Karl, Director
Superfund Division

Date:

6/23/05

Table of Contents

List of Acronyms

ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CIC	Citizens Information Committee
COPA	Citizens Opposed to PCB Ash
CFR	Code of Federal Regulations
IDEM	Indiana Department of Environmental Management
NPL	National Priorities List
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PCBs	Polychlorinated biphenyls
ROD	Record of Decision
RD/RA	Remedial Design/Remedial Action
TAG	Technical Assistance Grant
U.S. EPA	United States Environmental Protection Agency

Executive Summary

The first operable unit remedy for the Lemon Lane Landfill site in Monroe County, Indiana, included the removal of PCB contaminated waste material from the landfill to an approved off-site landfill, off-site incineration of capacitors, the construction of a Resource Conservation Recovery Act (RCRA) Subtitle C compliant cap and groundwater monitoring. The construction of the source control operable unit was completed on December 6, 2000.

The source control remedy is the first of three operable units or phases. Remedy decisions for water and sediment will be part of operable units two and three. The conclusion of this five-year review is that the first operable unit was constructed in accordance with the requirements of the ROD Amendment. PCBs, as expected, continue to be released into Clear Creek from springs associated with the Lemon Lane Landfill. However, water and sediment investigations are underway and a Proposed Plan for both the water and sediment operable units is scheduled to be available for public comment by January 30, 2006. A ROD Amendment is scheduled to be completed by May 1, 2006. At this time, the source control operable unit has been implemented as designed and is protective, but U.S. EPA cannot determine whether the entire site wide remedy is protective of human health and the environment until additional water and sediment investigations are completed, a Proposed Plan and ROD Amendment are developed for the water and sediment operable units, and construction of the remaining operable units of the remedial action are completed.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name (from WasteLan): Lemon Lane Landfill		
EPA ID (from WasteLan): IND		
Region: 5	**State:** IN	**City/County:** Bloomington/Monroe
SITE STATUS		
NPL status: Final		
Remediation status: First Operable Unit (Source Control) has been completed		
Multiple OU's: Yes	**Construction completion date:**	
Has site been put into reuse: partially		
REVIEW STATUS		
Lead Agency: U.S. EPA		
Author name: Thomas Alcamo		
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA Region 5	
Review period: 01/02/05 to		
Date(s) of site inspection: April 19, 2005		
Type of Review: Pre-SARA		
Review number: first		
Triggering action: Construction of source control operable unit		
Triggering action date (from Wastelan): May 19, 2000		
Due date (five years after triggering date): May 19, 2005		

FIVE-YEAR REVIEW SUMMARY FORM, cont'd.

Issues:

PCBs, as expected, continue to be released from springs into Clear Creek.

PCBs have contaminated sediments at Illinois Central Spring area, the swallow hole/quarry springs area and Clear Creek.

Restrictive covenants and/or other institutional controls have not been finalized.

Recommendations and Follow-up Actions:

Complete both the water and sediment investigations for Operable Units 2 and 3.

Complete the Proposed Plan and ROD Amendment for Operable Units 2 and 3.

Design and complete the construction of the remedy described in the ROD Amendment and implement the operation and maintenance activities.

Implement long-term monitoring program.

Continue with maintenance activities for the landfill cap and drainage structures.

Complete restrictive covenants and/or other institutional controls.

Protectiveness Statement(s):

The Source Control Operable Unit is functioning as intended by the ROD Amendment and is protective of human health and the environment. A site wide protectiveness determination cannot be made at this time because remedies at Operable Units 2 and 3 have not been implemented. The continuing release of PCBs into Clear Creek requires further investigation. Water and sediment investigations are underway to obtain the necessary data to evaluate the continuing release of PCBs. A Proposed Plan is scheduled for the water and sediment operable units by January 31, 2006 and a ROD Amendment for both operable units by May 1, 2006. Design and construction should be completed by the end of 2007. A protectiveness determination will be made after the construction of the water and sediment operable units.

Long-term Protectiveness:

Long-term protectiveness of the remedial action will be verified once the groundwater/sediment investigations are completed, a ROD Amendment is executed and construction of the remaining operable units of the remedial action are completed.

Other Comments:

Implementation of restrictive covenants and/or other institutional controls has been delayed due to the groundwater and sediment investigations that are underway.

The Lemon Lane Landfill Superfund Site
Monroe County
First Five-Year Review Report

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and make recommendations to address them.

The Agency is preparing this five-year review pursuant to CERCLA Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section 104 or 106, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The agency interpreted this requirement further in the NCP. 40 CFR Section 300.430(f)(4)(ii) of the NCP states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (U.S. EPA), Region V conducted a five-year review of the remedial actions implemented at the Lemon Lane Landfill site in Monroe County, Indiana. This report documents the results of the review. The Indiana Department of Environmental Management (IDEM), City of Bloomington and Monroe County Health Department provided support in the development of this five-year review.

This is the first five-year review for the Lemon Lane Landfill site. The source control operable unit final inspection was on December 6, 2000. The vegetative layer over the cap surface was not in place but was inspected in April 2001. Investigations for two additional operable units for water and sediment contamination are underway and the completion of the Proposed Plan for both operable units 2 and 3 are scheduled for public comment on January 30, 2006 and a ROD Amendment completed by May 1, 2006.

The Lemon Lane Landfill source control operable unit consisted of the excavation and off-site

disposal at a permitted commercial chemical waste landfill of PCB contaminated waste material greater than 50 parts per million on average. The total volume removed from the landfill was 80,087 tons. In addition to the 80,087 tons of contaminated material that was excavated and disposed of off-site, 4,402 PCB contaminated capacitors were incinerated in a permitted, commercial incinerator capable of treating PCBs. A RCRA Subtitle C compliant cap was placed over the remaining waste material. Areas outside the final landfill footprint had various clean up criteria based on future access to the area and whether the area was considered residential or not. Areas outside of the security fence, except the south perimeter, were required to have a maximum individual grid sample result of less than 5 ppm PCBs with an arithmetic average for all grids in the area at less than 5 ppm PCBs if ten inches of cover were used or at 2 ppm PCBs if no cover was used. Areas inside the security fence and outside of the landfill footprint, except on the south perimeter, were to be cleaned up to a maximum of 20 ppm PCBs for an individual grid with an average of less than 10 ppm PCBs with ten inches of cover. Individual grids on the south perimeter were cleaned up to less than 35 ppm. The average of all these grids were less than 20 ppm PCBs. Grids in the south perimeter which were accessible to people were covered with 10 inches of clean soil cover.

II. Site Chronology

Table 1 - Chronology of Site Events

Event	Date
The Lemon Lane Landfill was used as a disposal facility by Westinghouse for capacitors and capacitor production by-products	1958 - 1964
United States files civil action against Westinghouse Electric under CERCLA	January 4, 1983
Lemon Lane placed on National Priorities List	October 1982
Consent Decree signed for the incineration of PCB contaminated material from six sites in or near Bloomington, Indiana (Lemon Lane one of six)	August 22, 1985
Interim remedial measures implemented including removing capacitors and placing an interim cap over the landfill.	1987
State of Indiana passes law forbidding the review of the incinerator permit, preventing implementation of incineration remedy	1991
The Consent Decree parties (Westinghouse, U.S. EPA, State of Indiana, Monroe County, and City of Bloomington) agree to explore other remedies for the five Consent Decree sites through the operating principals (Anderson Road Landfill not included since the work was completed)	February 4, 1994
Due to a lack of progress on developing new remedies, Federal Judge S. Hugh Dillin issues judicial order stating that all source control for the five sites must be completed by December 31, 1999. Assigns Special Master (Magistrate Judge Kennard Foster) to oversee progress.	November 1997
Consent Decree parties make progress in negotiations for the cleanup of the six sites and Federal Judge S. Hugh Dillin agrees to extend deadline to December 31, 2000.	February 1999

ROD Amendment signed for the source control operable unit of the Lemon Lane Landfill.	May 12, 2000
Approval of the RD/RA Work Plan and Commencement of Excavation Activities	May 18, 2000
Source control operable unit construction completed	December 6, 2000
Cap Inspection And Maintenance Plan approved	June 18, 2001
Approval of the Final Report for the Remediation and Closure of the Lemon Lane Landfill	June 18, 2001
Long-Term Groundwater Monitoring Plan approved	April 22, 2002
Scheduled Public Comment Period for Proposed Plan for Operable Units 2 and 3	January 30, 2006

III. Background

Physical Characteristics

The Lemon Lane Landfill, located in the City of Bloomington, Indiana, is a former 10-acre municipal landfill that accepted both municipal and industrial waste material. The site is surrounded by residential properties on the north and east, railroad tracks on the south, and undeveloped property on the west. See Figure 1.

Land and Resource Use

The Lemon Lane Landfill as it currently exists lies in a residential area with undeveloped property to the west which could be developed commercially. The Indiana Department of Transportation has proposed that the route of the new Interstate 69 follow State Road 37 through Bloomington. State Road 37 runs directly north of the landfill. Drinking water wells are not used in the vicinity of the landfill.

History of Contamination

Viacom Inc., (formerly known as CBS Corporation and prior to that known as Westinghouse Electric Corporation), owned and operated a capacitor production facility in Bloomington. The insulating fluid used in the manufacture of the capacitors contained polychlorinated biphenyls (PCBs). The Lemon Lane Landfill was operated as a sanitary landfill from the late 1930s to 1964. From 1958 until the fall of 1964, PCB filled capacitors, PCB contaminated rags, sawdust and filter clay were disposed of at the Lemon Lane Landfill. Extensive salvaging of capacitors along with large scale burning of landfill material occurred during the landfill operation. In addition, evidence indicates other industrial wastes were disposed of in the landfill. The landfill is situated over two sinkholes that were filled with landfill material prior to PCB disposal. The total volume of landfill material was approximately 200,000 cubic yards based on landfill borings completed in 1996.

The Lemon Lane Landfill lies on the eastern margin of the Mitchell Plain and the topography is

typified by numerous karst features such as sinkholes, karst valleys, and springs. The site is near the watershed divide between Clear Creek to the south and Stout's Creek to the north. The landfill is underlain by 70 to 80 feet of the St. Louis Limestone and the soil cover over the St. Louis Limestone ranges in thickness from 5 to 20 feet at the landfill site. The Salem Limestone (70 to 80 feet thick) underlies the St. Louis Limestone and the Harrodsburg Limestone underlies the Salem. The St. Louis limestone in the vicinity of the landfill is thinly bedded and contains limestone, dolomite, and shale. Solution cavities, joints, and other fractures serve as routes for groundwater movement.

Water studies, including dye trace studies, have shown that a majority of low flow and storm water drainage from the Lemon Lane Landfill discharges at Illinois Central Spring, located about 2,500 feet southeast of the site. Illinois Central Spring is the headwater of Clear Creek, which runs through the City of Bloomington and joins Salt Creek near the Monroe Dam. Other springs located near the landfill are also connected to the site. Sampling has shown PCB contamination from the Lemon Lane Landfill in the following springs:

- Illinois Central Spring
- Quarry Spring
- Slaughterhouse Spring

Figure 2 shows the location of spring, sink, and surface water locations.

In addition, monitoring wells surrounding the Lemon Lane Landfill also have shown PCB contamination. Between September 1995 and June 1996, CBS completed the sampling of 29 residential wells within a one mile radius of the Lemon Lane Landfill. The results showed those wells were not contaminated with PCBs. These wells are not currently used by residents for drinking water.

The information gathered from the site investigations show that PCB contamination has migrated from the site and deep into the rock under and around the landfill prior to the implementation of the source control operable unit. This material will continue to migrate from the site to Illinois Central Spring and possibly other springs in the area. Illinois Central Spring (which has been investigated more extensively since it receives the majority of flow from Lemon Lane) contains between 5 and 20 parts per billion PCBs at low flow (20 to 200 gallons per minute) and up to 400 ppb during large storm events (2000 to 4000 gallons per minute). The release and continuing release of PCBs will affect Clear Creek and provide exposure pathways for both humans and ecological receptors. Clear Creek currently has a Level 5 fish advisory (do not eat any fish) set by the State of Indiana due to PCB and mercury contamination.

Initial Response

The Lemon Lane Landfill was placed on the National Priorities List in October 1982 and was one of the six sites included in the Consent Decree that was entered by the court on August 22, 1985. The Consent Decree called for the construction of a permitted, TSCA-approved, dedicated, municipal solid waste-fired incinerator to be used to destroy PCB contaminated soils and materials excavated from the six sites.

Public opposition to the incinerator arose before and after entry of the Consent Decree. Applications for the necessary permits to design and build the incinerator were submitted by Viacom in 1991. Beginning in 1991, the Indiana State Legislature passed several laws which ultimately prevented construction of the incinerator required in the 1985 Consent Decree. In February 1994, the parties agreed to jointly explore, under the "Operating Principles" alternatives to the incineration remedy.

Interim measures have been implemented by Viacom and the U.S. EPA at and near the Lemon Lane Landfill. In 1987, Viacom removed and incinerated off-site 404 capacitors from the landfill surface. In addition, Viacom placed a flexible membrane liner over the landfill surface to prevent water from infiltrating into the waste material. A sediment removal was completed in Clear Creek for approximately 2,770 feet near the Winston Thomas site. U.S. EPA funded the construction of a 1000 gallon per minute water treatment plant, along with storage for 1.3 million gallons of storm water for the Illinois Central Spring, which is hydraulically connected to Lemon Lane, through a time-critical removal action. The water treatment plant went online in May 2000 and the operation and maintenance was funded for three years by the Indiana Department of Environmental Management (IDEM). An agreement is in place for U.S. EPA, Viacom, City of Bloomington and IDEM to fund the operation and maintenance of the treatment plant until August 1, 2006.

Based upon the Operating Principles that were agreed to in February 1994 and the court order requiring completion of source control remedy by December 31, 2000, the U.S. EPA on January 3, 2000 made available for 60 days to the public the Proposed Plan for the Lemon Lane Landfill. The other governmental parties (IDEM, City of Bloomington, Monroe County) concurred on the Record of Decision (ROD) Amendment and the ROD Amendment was signed by the U.S. EPA on May 12, 2000.

Basis for Taking Action

At the Lemon Lane Landfill, PCBs are the main contaminant of concern. PCBs have been discovered in soil, groundwater and sediment. Other contaminants, such as volatile organic compounds, have also been discovered in the landfill and in groundwater, but are not the main contaminant of concern. Prior to the source control operable unit, unacceptable risk existed in soils surrounding the landfill and a temporary cap was placed over the landfill in the 1987 interim action.

Due to the karst hydrology, groundwater discharges at springs near the site. The release of PCBs from Illinois Central Spring has contaminated water and sediment in Clear Creek. A Remedial Investigation/Feasibility Study equivalent is in progress for the groundwater and sediment.

IV. Remedial Actions

Remedy Selection

The ROD Amendment for the Lemon Lane Landfill source control operable unit was signed on May 12, 2000. The Remedial Action Objectives for the source control operable unit were as

follows:

- Reduce or eliminate the direct contact threat associated with contaminated soil/landfill material.

- Minimize contaminant migration within the karst topography and to groundwater and surface water to levels that ensure the beneficial reuse of these resources.

- Minimize future migration of groundwater contamination to surface water.

The remedy for the source control operable unit that was chosen in the May 12, 2000 ROD Amendment included the following:

- Excavation and removal of selected areas of contamination (hot spots) with greater than 50 parts per million PCBs on average, and disposal of the excavated soils and materials in a commercial, permitted chemical waste landfill.

- PCB capacitors discovered during the excavation were incinerated off-site in a permitted, commercial incinerator capable of meeting a destruction and removal efficiency of 99.99999%.

- Construction of a Resource Conservation Recovery Act (RCRA) Subtitle C compliant cap meeting the permeability requirements of 1×10^{-7} centimeters per second over the landfill surface to address the low level threat remaining. To limit surface water from migrating into the landfill, lined drainage ditches surround the landfill to control surface water run on and surface water run off from the site.

- Areas outside the landfill cap to the north, east and west side of the site and outside the fence line were remediated to high occupancy/residential standard of 2 ppm PCBs on average. Areas within the fence line not covered by the landfill cap were remediated to a low occupancy/industrial standard of 10 ppm on average with 10 inches of clean soil cover. Areas on the south side of the site that are outside the limit of the cap, including the railroad berm, were remediated to 20 ppm PCBs on average.

- A long-term inspection and maintenance plan for the landfill cap.

- A long-term groundwater, springs and surface water monitoring program were implemented.

- Fencing of the landfill with posting of signs at the perimeter and the implementation of institutional controls to prevent the use of the capped area.

Investigations for groundwater and sediment operable units are underway. A status report signed by all the governmental parties and Viacom was submitted to the U.S. District Court on January 13, 2005 describing the schedule for the Proposed Plans for the Lemon Lane Landfill, Neal's Landfill and Bennett's Dump. The governmental parties and Viacom have agreed that a Proposed Plan for the remaining Lemon Lane Landfill operable units will be completed by

January 30, 2006 and a global settlement for all the issues remaining for the Consent Decree sites will be completed by August 1, 2006. It is estimated that the construction for operable units 2 and 3 will be completed by the end of 2007.

Remedy Implementation

In the Consent Decree, Viacom Inc. (formerly Westinghouse Inc. and CBS Corporation) agreed to build a municipal waste fired incinerator dedicated for the destruction of PCB contaminated material from six sites located in the Bloomington, Indiana area. Beginning in 1991, the Indiana State legislature passed several laws ultimately prevented construction of the incinerator required in the Consent Decree. In February 1994, the parties agreed to jointly explore under the Operating Principles alternatives to the incineration remedy for the five remaining sites. Anderson Road Landfill was previously remediated by Viacom.

In November 1997, Judge S. Hugh Dillin issued an Order stating that the six Consent Decree sites must be remediated by December 1999. Judge Dillin also assigned Special Master Kennard Foster to oversee the progress of the parties toward meeting the December 1999 deadline. On February 1, 1999, Judge Dillin issued another Order approving and adopting Report and Recommendations of Special Master Kennard Foster which extended the deadline for completion of the source control at the remaining five sites by December 31, 2000. The source control remedies were completed by the December 31, 2000 deadline and Viacom and the governmental parties are in the process of negotiating a global settlement[1] for all the remaining issues for the six Consent Decree sites.

The Remedial Design/Remedial Action (RD/RA) Work Plan for Lemon Lane Landfill site which contained the design of the source control operable unit was approved on May 18, 2000. Mobilization began in April 2000 and excavation activities began immediately after approval of the RD/RA Work Plan. Excluding the vegetative layer over the cap and the installation of a permanent fence, construction of the source control operable unit was completed on December 6, 2000. The Remedial Action Final Report was approved on June 18, 2001. The source control operable unit involved the following:

- Excavation and disposal of 80,087 tons of PCB contaminated material greater than or equal to 50 ppm to Environmental Quality Company's Wayne Disposal Landfill.
- Excavation and transporting a total of 4,402 capacitors to Onyx Environmental in Port Arthur, Texas for incineration.
- Consolidation of 40,000 cubic yards of landfill material to shrink the size of the landfill to approximately 9 acres.
- Installing a Resource Conservation Recovery Act Subtitle C compliant cap over the remaining landfill material. The cap consisted of 6-inches of topsoil, 18-inches clean

[1] The global settlement will include both technical and non-technical issues. Technical issues such as water remediation and sediment remediation remain to be addressed at Lemon Lane Landfill, Neal's Landfill and Bennett's Dump. Non-technical issues include the recovery of costs incurred by U.S. EPA and the governmental parties and compensation for any natural resource damages.

granular fill, a geocomposite drainage layer, 40 millimeter thick geomembrane, geosynthetic clay layer and perimeter drainage/stormwater retention pond.
- Installing 4 piezometers into the landfill to determine if the landfill waste is becoming backflooded (i.e. wet).
- Figure 4 shows the final cleanup numbers for areas outside the landfill cap.
- Implementing a Groundwater Monitoring Plan and Cap Inspection Plan

Operation and Maintenance

The Lemon Lane RCRA Cap Inspection and Maintenance Plan was approved in June 2001 and the following activities are performed by Viacom:

- Routine site inspections are completed quarterly to determine if damage has occurred to the landfill cap and repairs made as needed.
- Mowing is completed as needed.
- Application of herbicide at the fence line and rip rap drainage ways completed annually.
- Topographic survey/subsidence report is completed biennially (every two years).

The Lemon Lane Long-Term Groundwater Monitoring Program was approved in April 2003 and consists of the following monitoring activities:

- Monthly non-storm groundwater monitoring for PCBs, temperature, and conductivity at Illinois Central Spring and Quarry Spring.
- Quarterly non-storm groundwater monitoring for PCBs and total suspended solids at Slaughterhouse Spring.
- Storm water sampling for PCBs, flow, temperature, conductivity and total suspended solids two times per year at Illinois Central Spring.
- Storm water sampling for PCB, flow, temperature, conductivity and total suspended solids two times at Slaughterhouse Spring.
- Quarterly monitoring of the 4 piezometers (PZ-AS, PZ-AD, PZ-BS, PZ-BD) within the landfill to measure groundwater levels in and around the landfill.
- Continuous water level monitoring in Monitoring Well 6.
- Fish/Sediment sampling event in Clear Creek and Illinois Central Spring/Quarry Spring Branch of Clear Creek.

It is estimated that the annual cost for the operation and maintenance, including groundwater monitoring is $90,000.

Operation and maintenance activities are also associated with the Illinois Central Spring Water Treatment Plant that was constructed under the authority of U.S. EPA's removal program. The water operable unit is currently evaluating if the 1,000 gallon per minute spring treatment facility with 1.3 millions gallons of stormwater storage requires expansion. EPA funded the operation during the startup phase of operation of the treatment plant from May 2000 to August 1, 2000. From August 1, 2000 to July 31, 2004, IDEM funded the operation of the treatment plant. An agreement was reached between U.S. EPA, IDEM, City of Bloomington and Viacom to jointly fund the operation and maintenance of the plant until August 1, 2006. The annual cost to perform operation and maintenance is approximately $200,000.

V. Progress Since the Last Five-Year Review

This is the first five-year review for the site.

VI. Five-Year Review Process

Administrative Components

The U.S. EPA has given a Technical Assistance Grant (TAG) to the group Citizens Opposed to PCB Ash (COPA) and a Citizens Information Committee (CIC) has been formed to disseminate information regarding the Consent Decree sites and the PCB issues in Bloomington, Indiana. Public Meetings are held at least 4 times per year and the meetings are filmed for broadcast over the Bloomington cable access television. The CIC group was notified on January 25, 2005 that a five-year review was underway for the Lemon Lane Landfill site. The State of Indiana, City of Bloomington and Monroe County have reviewed the five-year review.

Community Involvement

A discussion took place at the CIC meeting on January 25, 2005 describing the five-year review process. In addition, a notice was placed in the Bloomington Herald Times on March 31, 2005 stating that a five-year review was being conducted. During the CIC meeting, a number of community members expressed concern regarding the continuing release of PCBs into Clear Creek and the protectiveness of the site remedy. The community also has expressed its frustration with the slow pace of the cleanup activities.

The Lemon Lane Landfill is the subject of a citizens lawsuit (Protect Our Woods, Sarah Frey vs. U.S. EPA and Viacom). Presently, the case has been remanded back to the U.S. District Court in Indianapolis from the Seventh Circuit of Appeals.

Document Review

The five-year review consisted of a review of past and present monitoring and hydrogeological data.

Data Review

The data reviewed for this Five-Year Review consisted of the Quarterly Inspection and Maintenance Reports, Surface Water, Flow and Water Level Monitoring Quarterly Reports, and data from the groundwater and sediment investigations that are underway for operable units 2 and 3.

Landfill Cap Inspection

Since the completion of the landfill cap in late 2000 and completing the vegetative layer in spring 2001, only minor erosion issues have arisen. Viacom continues to repair any problems associated with the cap but overall, the cap remains intact and functioning as designed.

Groundwater and Surface Water Monitoring

The long-term groundwater monitoring plan continues to be implemented by Viacom. Figure 3 describes the monitoring locations and Tables 2 through 5 show the results of the monitoring from Quarry Springs, Illinois Central Spring, Slaughterhouse Spring and data from the 4 piezometers within the landfill.

Illinois Central Spring and Quarry Springs are currently being evaluated in the groundwater investigation that is underway for operable unit two. Currently, a spring water treatment plant with a capacity of 1000 gallons per minute, and 1.3 million gallons of storage, captures and treats PCBs at Illinois Central Spring. The water treatment plant treats approximately 91 percent of the water released from ICS and 78 percent of the PCB mass released. From May 1, 2000 to May 1, 2005, a total of 523,713,010 gallons of contaminated spring water has been treated by the water treatment plant. Large rainfall events have produced flows at ICS which have resulted in water bypassing the treatment plant. The following is a list of bypass events from the water treatment plant:

- 2005 - 1 bypass event - January 3 to January 16
- 2004 - 1 bypass event - January 4 to January 9
- 2003 - 3 bypass events - May 5 to 7, May 11, November 26 to November 30
- 2002 - 7 bypass events - February 1 to 3, March 26 to 28, April 14 to 16, April 22 to 25, April 27 to 29, May 8 to 16, June 6

The four piezometers installed into the landfill have been placed into sinkholes. See Figure 3, Two piezometers (AD and BD) have been placed at the soil/bedrock interface, above the landfill waste material. Piezometer AD is 38.5 feet below ground surface and piezometer BD is 42.5 feet below ground surface. The two other piezometers (AS and BS) are placed at the soil waste interface which would be near the bottom of the landfill material. Piezometer AS is 31.5 feet below ground surface and piezometer BS is 33 feet below ground surface. Evaluating the piezometer data as shown in Table 5, groundwater has not been detected in either the AS or BS piezometers located at the soil/waste material interface. During larger rainfall events, groundwater periodically has moved into the soil/bedrock piezometers (AD, BD), but still about 15 feet below any waste material. Figures 5 and 6 show a schematic diagrams of the landfill, including the depth to the soil/fill (landfill waste material), the natural clay layer and bedrock surface. The maximum water level ever measured in piezometers PZ-AD and PZ-BD are shown on Figures 5 and 6. Evaluating the piezometer water level monitoring data from within the landfill and the elevation of the soil/fill clearly demonstrates that the landfill material is not being wetted or backflooded.

The monthly non-storm PCB monitoring results for Illinois Central Spring is shown in Table 3. PCB results have ranged from 2.5 ppb to 22 ppb during non-storm events. During storm events, a flushing effect occurs in the karst conduits and additional PCBs are released.

As shown in Table 4, Slaughterhouse Spring is usually non-detect for PCBs but it has shown 3 PCB values slightly greater than the detection limit of 0.1 parts per billion. The last detection of PCBs was in May 2001. Two storm events have been sampled at Slaughterhouse Spring from October 25, 2003 to October 27, 2003 and from November 18, 2003 to November 19, 2003.

Results show two detections of .2 ppb PCBs during the November 2003 storm event which are slightly above the detection limit.

Sediment Investigation

Viacom has undertaken a sediment investigation in the area near the ICS water treatment plant and within Clear Creek. The sediment investigation is schedule to be completed in late 2005 and if sediment removal is required, the details will be presented in the Lemon Lane Proposed Plan scheduled for January 31, 2006.

Site Inspection

The last U.S. EPA site inspection was on April 19, 2005. Frequent visits to the landfill have taken place since the completion of the source control, because Viacom continues to investigate groundwater in the southeast portion of the site. The inspection showed no unusual problems with the landfill cap and the associated drainage structures. Some areas of the perimeter surface water drainage ditches around the cap have accumulated some vegetation and sediment but will not impede water flow. Formal site inspections are completed on a quarterly basis by Viacom with the last inspection being performed on June 14, 2005.

In addition, Mr. Jerry Pelfree, who owns a 3-acre portion of the landfill has parked a number of cars on property adjacent to the landfill cap. These cars have not impeded any maintenance or investigation activities.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The source control operable unit described in the ROD Amendment was implemented and is functioning as designed. As shown in Figure 6, water level monitoring data from piezometers within the landfill shows that groundwater is not backflooding the landfill material under the cap. The large amount of contaminated landfill material in the southeast portion of the site that was coming into contact with groundwater has been eliminated by the remediation activities. Because PCBs migrated into bedrock and the karst features around the landfill before placement of the final cap, PCBs continue to be released into groundwater at ICS and Quarry Springs. Therefore, even full excavation of the landfill to the bedrock surface would not stop the continuing release of PCBs. The releases are being evaluated in the water and sediment operable units.

Viacom has implemented an approved landfill cap maintenance plan and a long-term groundwater monitoring plan. The maintenance and monitoring continues to be effective in maintaining the effectiveness of the source control and no unusual costs have occurred that could indicate a potential issue with the source control.

Access controls are in place at the site and include fencing and warning signs. Institutional controls are not in place but will be put in place once the final remedy is implemented.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy selection still valid?

Applicable or relevant and appropriate requirements (ARARs) for the source control operable unit have not been revised or new promulgated standards have not been put in place. New ARARs will be identified in the Proposed Plan for the water and sediment operable units.

Changes in Exposure Pathways, Toxicity and Other Contaminant Characteristics

No changes have occurred in the land use around the Lemon Lane Landfill but this may change. The proposed route of Interstate 69 will follow the current State Road 37 path which runs parallel to the site and approximately 1000 feet north of the site. The new interstate may bring additional development to the area. The U.S. EPA is completing both ecological and human health risk assessments for the water and sediment operable units.

Expected Progress Towards Meeting the Remedial Action Objectives

The source control remedy is progressing as expected. The direct contact threat has been reduced by replacing the interim cap consisting of only a liner with a multi media cap containing 2 feet of compacted clay and a flexible membrane liner. Areas both inside and outside the landfill fence line were remediated to either residential or industrial PCB cleanup standards. Figure 4 shows the final PCB verification sampling results for areas inside and outside the landfill cap. As expected, PCBs continue to be released to Illinois Central Spring and Quarry Springs but the removal of the over 80,000 tons of PCB contaminated material and over 4,400 capacitors has helped to minimize the continuing release of PCBs, particularly in the southeast portion of the site which was backflooding during large rain events. The monitoring of water levels in the landfill through the installation of the four piezometers within the landfill also has demonstrated that water has not wetted the landfill material, thereby helping to minimize the PCBs being released. The continuing release of PCBs are being addressed in the water and sediment operable units and new Remedial Action Objectives will be developed for those operable units.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The source control operable unit is functioning as designed and remains protective. As expected, the continuing release of PCBs from ICS and Quarry Springs has required further evaluation in the water operable unit. In addition, PCB contaminated sediment is also being evaluated in the sediment operable unit to determine if remediation is required.

VIII. Issues

Table 3

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Vegetation and sediment in drainage ditches	N	N
Continuing release of PCBs from the springs	Unknown	Unknown
Finalize Deed Restrictions	N	Unknown

IX. Recommendations and Follow-up Actions

Table 4

Issue	Recommendations Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					Current	Future
Vegetation and sediment in drainage ditches	Monitor drainage flow and if drainage impeded, remove sediment and vegetation	Viacom	EPA	7/1/05	No	No
PCBs released from springs into Clear Creek	Investigate site hydrology and sediment in Clear Creek	Viacom	EPA	12/31/05	unknown	unknown
PCBs released from springs into Clear Creek and contaminated sediment in Clear Creek	ROD amendment for operable units 2 and 3 (water and sediment)	EPA	State	5/1/06	unknown	unknown

X. Protectiveness Statement(s)

The Source Control Operable Unit is functioning as intended by the ROD Amendment and is protective of human health and the environment. A site wide protectiveness determination cannot be made at this time because remedies at Operable Units 2 and 3 have not been implemented. Further information is required and is being completed under the U.S. EPA approved Groundwater Investigation Plan, Groundwater Monitoring Plan and sediment investigation. The groundwater and sediment investigations should be completed by late 2005. A Proposed Plan for operable units two and three are scheduled for public comment by January 30, 2006 with a ROD Amendment scheduled to be executed by May 1, 2006. Additional Remedial Action Objectives will be developed for the water and sediment operable units. Design and construction should be completed by the end of 2007. A protectiveness determination will be made after the construction of the water and sediment operable units.

XI. Next Review

The next five-year review for the lemon Lane Landfill will occur in May 2010, or sooner.

Appendix A

Figures

Figure 1 - Site Location Map

Figure 2 - Spring, Sink and Surface Water Locations

Figure 3 - Monitoring and Sampling Locations

Figure 4 - Final Grid and Verification Results

Figure 5 - Geologic Schematic A-A'

Figure 6 - Geologic Schematic A-A'

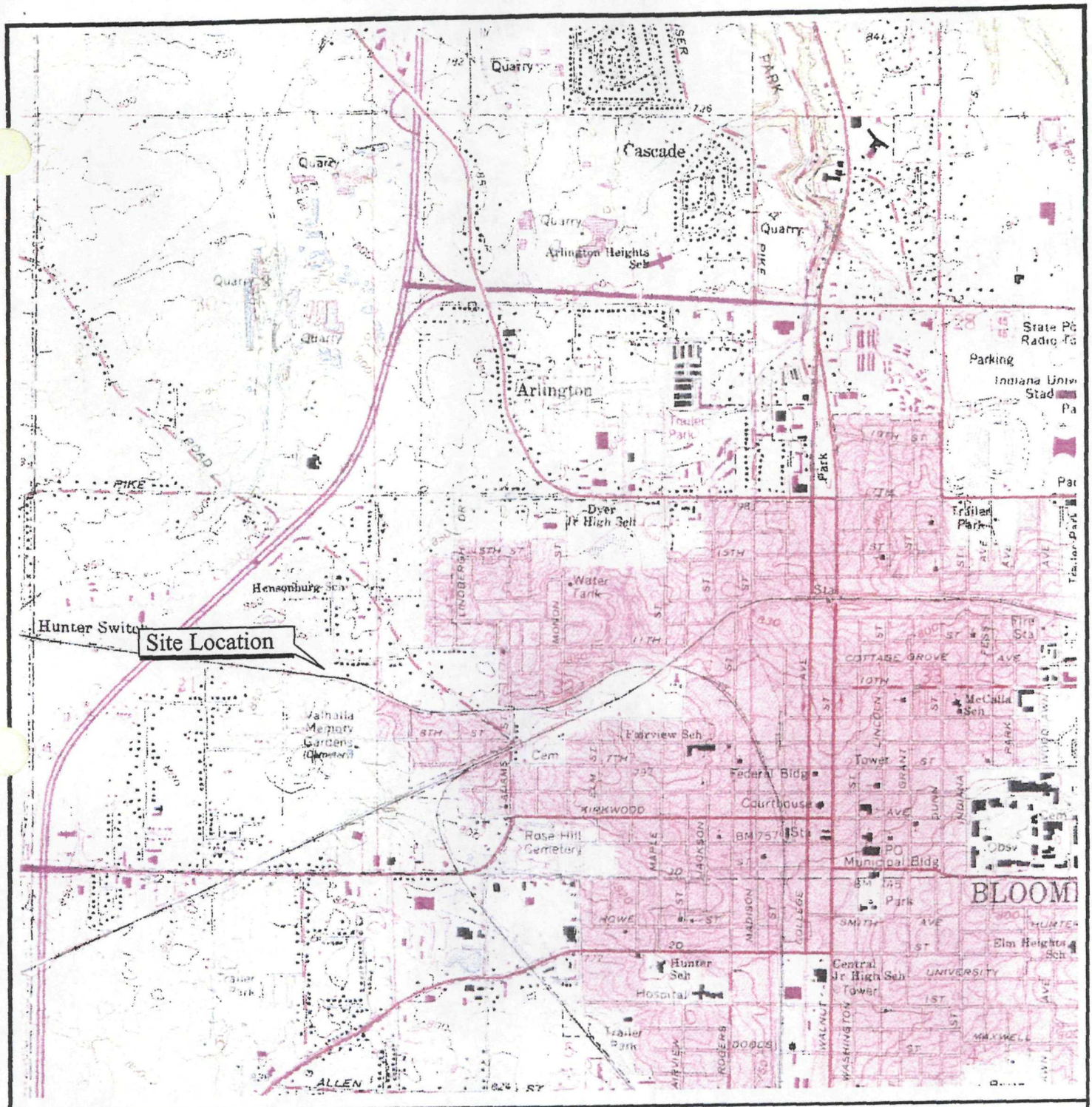
Tables

Table 5 - Post-Remediation PCB Results at Quarry Springs

Table 6 - Post-Remediation PCB Results at Illinois Central Spring

Table 7 - Post-Remediation PCB Results at Slaughterhouse Spring

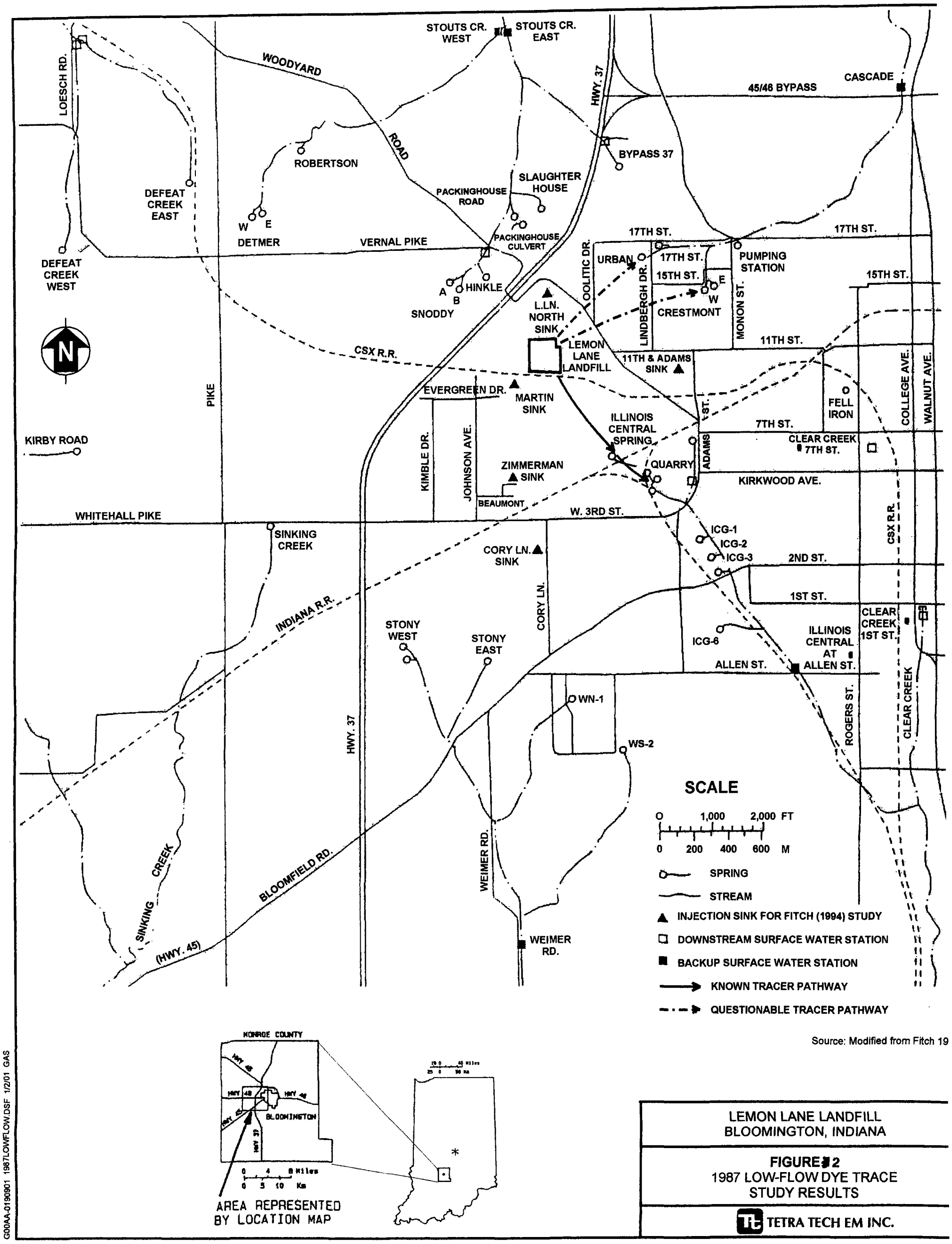
Table 8 - Crest Gauge Data for Piezometers AD, AS, BS, BD



PSARA TECHNOLOGIES, INC.

Legend	CBS CORPORATION
USGS 7.5 Minute Quadrangle Bloomington, Ind 39086-B5-TF-024	**Figure 1.** **Site Location Map** **Lemon Lane Landfill** **Bloomington, Indiana**

Drawn by:	*Date:*	*Scale:*
AKA	1/27/00	1:24000



Source: Modified from Fitch 19

G00AA-0190901 1987LOWFLOW.DSF 1/2/01 GAS

LEMON LANE LANDFILL
BLOOMINGTON, INDIANA

FIGURE 2
1987 LOW-FLOW DYE TRACE
STUDY RESULTS

TETRA TECH EM INC.

Slaughterhouse Spring

SARGENT'S POND

HWY 37

MW-1D MW-12 SP-1 MW-1S MW-2 PZ-BD PZ-G LNW PZ-BS MW-13 MW-14 MW-3 LLNE MW-17 MW-4S MW-4D MW-21 MW-10 MW-11 MW-20 MW-18 MW-B3 PZ-C PZ-D MW-8S PZ-J PZ-AS MW-19 LLSE LF-5 LLSW PZ-AD MW-16 LF-1 PZ-E LF6-4 LF6-8 PZ-H PZ-F PZ-I MW-15 NN-700 NN-625 NN-412 00-587 MW-B1 00-387 NN-300 NN-12 MW-5 MW-11 MW-6 00-370 00-300 00-125 MW-B2 MS-1

LEMON LANE LANDFILL

W. VERNAL PIKE

VALHALLA CEMETERY

Illinois Central Spring

Quarry Spring A

Quarry Spring B

Quarry Spring C

Quarry Spring Culvert

WEST 3RD STREET

Graphic Scale
0 225 450
(in Feet)

revised site plan inset.dwg Sheet (Layout1)

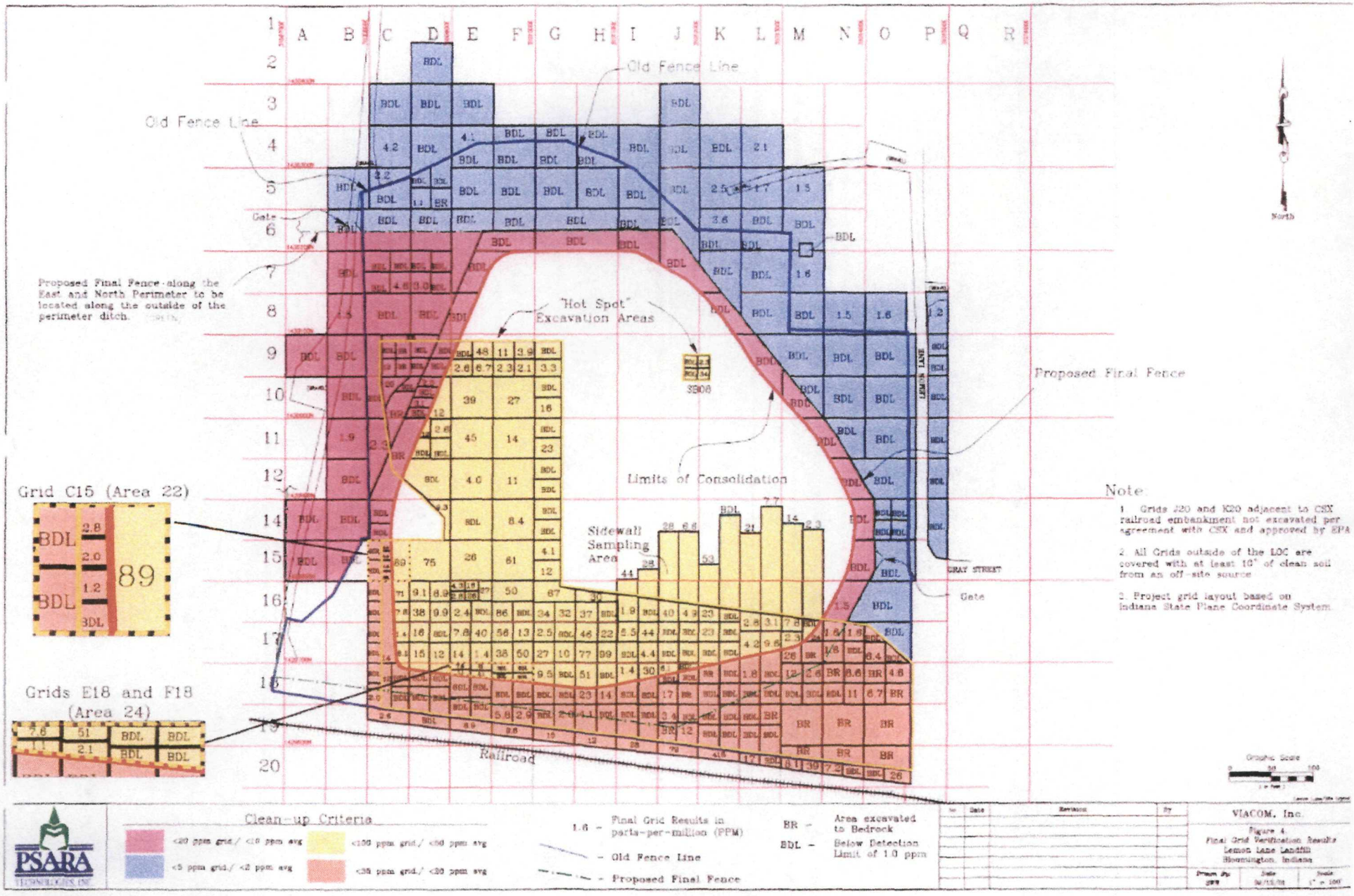
PSARA TECHNOLOGIES, INC.

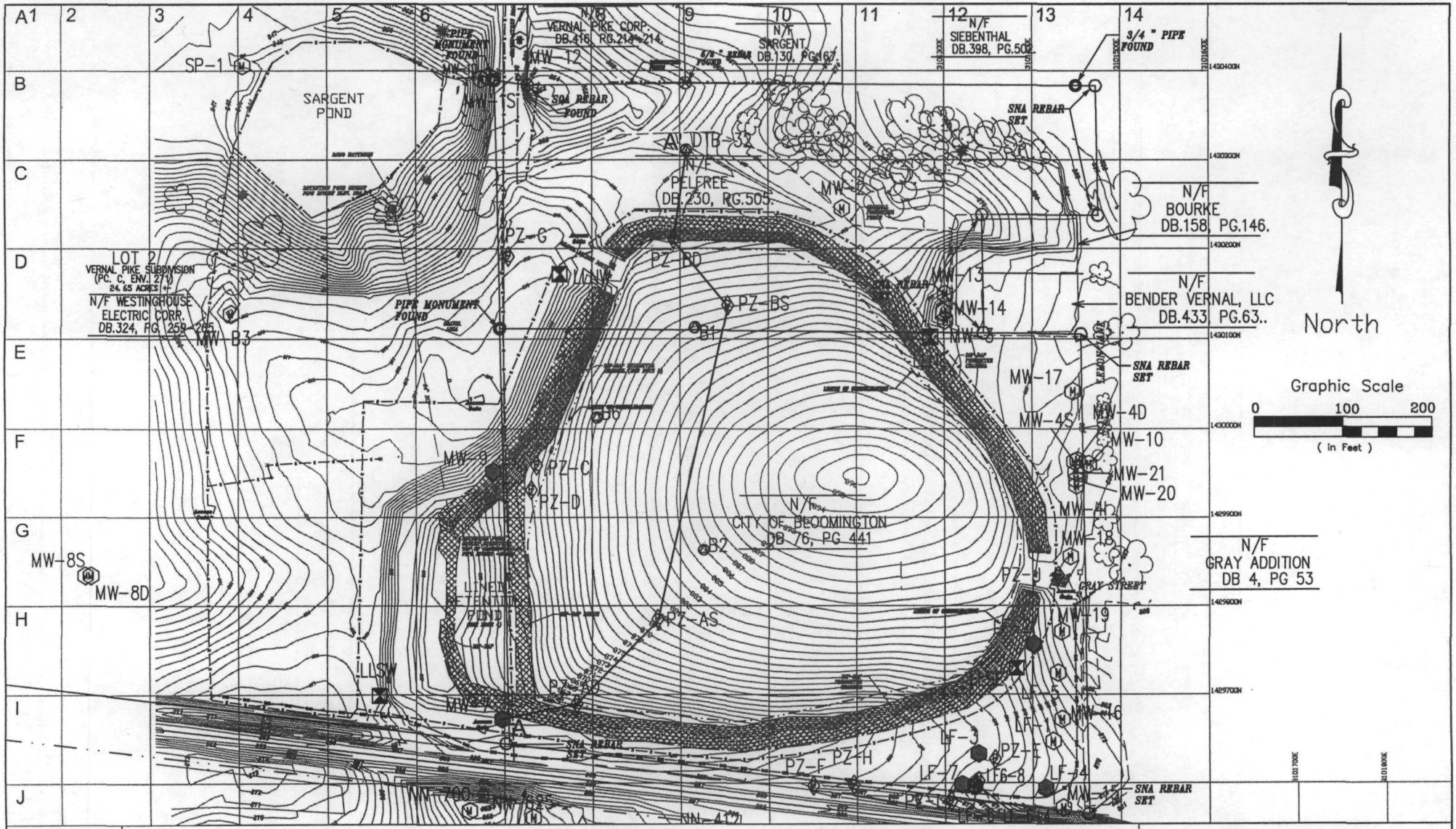
QUARRY SPRING	Spring	®	Rain Gauge
MW-5	Monitoring Well	—x—x—x—	Landfill Perimeter Fence
PZ#3	Piezometer	—x—x—x—	Chain Link Fence
BD-389	Survey Control Point		

VIACOM, Inc.

Figure 3
Monitoring and Sampling Locations
Lemon Lane Landfill
Bloomington, Indiana

Drawn By:	Date:	Scale:
RLR	3/2/04	1"=450'


Old Fence Line
Old Fence Line
Gate
Proposed Final Fence along the East and North Perimeter to be located along the outside of the perimeter ditch.
"Hot Spot" Excavation Areas
Proposed Final Fence
Limits of Consolidation
Sidewall Sampling Area
Gate
GRAY STREET
LEMON LANE
Railroad
North
Grid C15 (Area 22)
BDL
2.8
2.0
1.2
BDL
89
3DL
Grids E18 and F18 (Area 24)
7.6
51
BDL
BDL
1.1
2.1
BDL
BDL
Note
1. Grids J20 and K20 adjacent to CSX railroad embankment not excavated per agreement with CSX and approved by EPA
2. All Grids outside of the LOC are covered with at least 10" of clean soil from an off-site source
3. Project grid layout based on Indiana State Plane Coordinate System
Graphic Scale
0
50
100
PSARA TECHNOLOGIES INC
Clean-up Criteria
<20 ppm grid./ <10 ppm avg
<100 ppm grid./ <50 ppm avg
<5 ppm grid./ <2 ppm avg
<35 ppm grid./ <20 ppm avg
1.6 - Final Grid Results in parts-per-million (PPM)
- Old Fence Line
- Proposed Final Fence
BR - Area excavated to Bedrock
BDL - Below Detection Limit of 1.0 ppm
No. Date Revisions By
VIACOM, Inc.
Figure 4
Final Grid Verification Results
Lemon Lane Landfill
Bloomington, Indiana
Project No. 0909
Date 10/15/01
Scale 1" = 100'



SOURCE PROVIDED BY:

PSARA TECHNOLOGIES, INC.

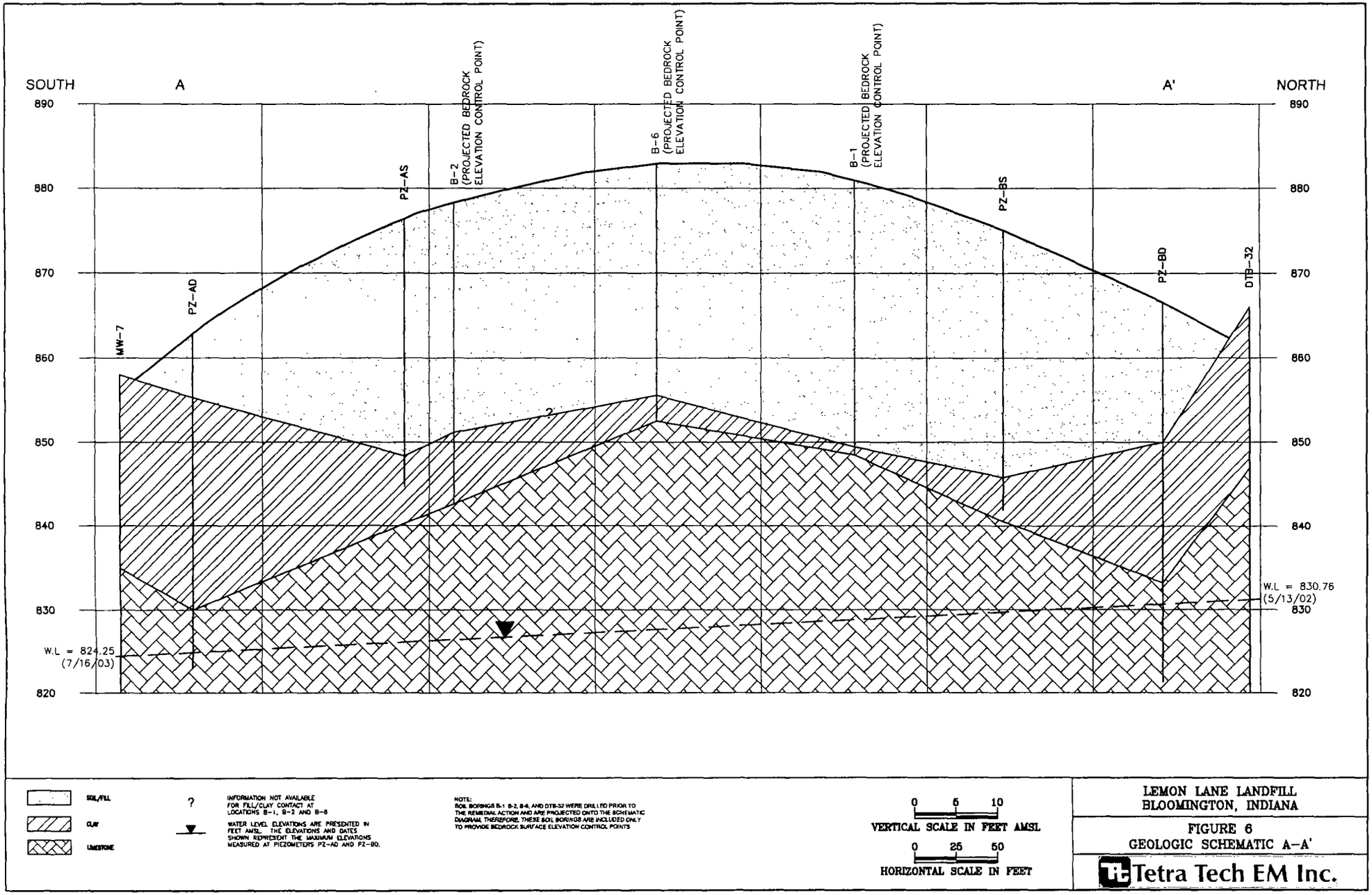
PZ-E	Piezometer	FIRE HYDRANT	DECIDUOUS TREE	RCP PIPE
MW-15	Monitoring Well	POWER POLE	CONIFEROUS TREE	RAILROAD TRACKS
MW-9	Decommissioned Monitor Well	GUY WIRE	1'CONTOUR INTERVAL	LIMITS OF CONSOLIDATION
B1	Soil Boring	LIGHT POLE	WATER VALVE	CHAIN LINK FENCE
	Surface Casing	TELEPHONE POLE	OVERHEAD ELECTRIC	LANDFILL PERIMETER FENCE
LLSW	Survey Control Point	UTILITY POLE	GAS LINE	CENTER OF CHANNEL FLOW
			PROPERTY BOUNDARY	

Note: Property boundaries taken from Figure 1, Lemon Lane Landfill Boundary and Topographic Survey, dated January 21, 2000 by Smith Neubecker & Associates, Inc.

LEMON LANE LANDFILL
BLOOMINGTION, INDIANA

FIGURE 5
GEOLOGIC SCHEMATIC A-A'

Tetra Tech EM Inc.



SOIL/FILL

CLAY

LIMESTONE

? INFORMATION NOT AVAILABLE FOR FILL/CLAY CONTACT AT LOCATIONS B-1, B-2 AND B-6

WATER LEVEL ELEVATIONS ARE PRESENTED IN FEET AMSL. THE ELEVATIONS AND DATES SHOWN REPRESENT THE MAXIMUM ELEVATIONS MEASURED AT PIEZOMETERS PZ-AD AND PZ-BD.

NOTE:
SOIL BORINGS B-1, B-2, B-4, AND DTB-32 WERE DRILLED PRIOR TO THE REMEDIAL ACTION AND ARE PROJECTED ONTO THE SCHEMATIC DIAGRAM. THEREFORE, THESE SOIL BORINGS ARE INCLUDED ONLY TO PROVIDE BEDROCK SURFACE ELEVATION CONTROL POINTS

0 5 10
VERTICAL SCALE IN FEET AMSL

0 25 50
HORIZONTAL SCALE IN FEET

LEMON LANE LANDFILL
BLOOMINGTON, INDIANA

FIGURE 6
GEOLOGIC SCHEMATIC A-A'

Tetra Tech EM Inc.

Table 5.

Post-Remediation PCB Results
Quarry Spring
Lemon Lane Landfill, Bloomington, Indiana

Sample ID	Sampling Date	PCB[a], ppb	Flow[b] gal/min
LL12081	16-Jul-04	0.72	300
LL11996	14-Jun-04	0.84	60
LL11771	05-May-04	0.82	50
LL11738	19-Apr-04	0.84	70
LL11554	09-Mar-04	0.71	400
LL11550	13-Feb-04	0.81	200
LL11546	14-Jan-04	2.0	200
LL11541	09-Dec-03	0.92	150
LL11378	05-Nov-03	0.66	120
LL11256	08-Oct-03	0.09	50
LL11203	09-Sep-03	1.0	60
LL11172	05-Aug-03	1.1	150
LL11125	09-Jul-03	0.81	30
LL11120	02-Jun-03	1.0	150
LL11116	14-May-03	0.98	800
LL11099	10-Apr-03	0.38	200
LL11077	17-Mar-03	0.64	200
LL11072	07-Feb-03	1.2	40
LL11065	10-Jan-03	0.96	50
LL10970	03-Dec-02	0.42	20
LL10965	12-Nov-02	0.69	90
LL10960	11-Oct-02	1.1	70
LL10943	04-Sep-02	1.7	25
LL10914	08-Aug-02	1.5	20
LL10896	17-Jul-02	1.7	50
LL10883	10-Jun-02	0.95	140
LL10861	21-May-02	1.3	NR[c]
LL10788	11-Apr-02	0.70	125
LL10764	14-Mar-02	0.85	300
LL10745	13-Feb-02	1.0	100
LL10724	22-Jan-02	1.1	15
LL10719	03-Jan-02	0.95	10
LL10465	19-Oct-01	0.88	80
LL10456	13-Sep-01	1.3	50
LL10451	17-Aug-01	1.7	12
LL10379	27-Jul-01	0.78	15
LL10351	14-Jun-01	1.8	100
LL10204	15-May-01	0.89	NR[c]
LL10143	11-Apr-01	1.1	225
LL10078	20-Mar-01	1.3	NR[c]
LL10063	27-Feb-01	0.37	NR[c]
LL10042	27-Nov-00	1.3	NR[c]

[a] Samples were analyzed to a detection limit of 0.1 parts per billion (ppb) for all PCB parameters except Aroclor 1221 (detection limit 0.2 ppb or 0.5 ppb). Other detection limits may occasionally result from non-normal sample volumes, dilutions, etc.

[b] Flow estimated visually.

[c] Flow estimate not reliable due to beaver dam or other obstruction.

NR = Not reported

Table 6. Post-Remediation PCB Results
Illinois Central Spring
Lemon Lane Landfill, Bloomington, Indiana

Sample ID	Sampling Date	PCB[a], ppb	Flow, gal/min
LL12083	16-Jul-04	5.1	150[b]
LL12084(DUP)	16-Jul-04	10	150[b]
LL11998	14-Jun-04	17	60[b]
LL11999(DUP)	14-Jun-04	14	60[b]
LL11773	05-May-04	9.1	90[b]
LL11774(DUP)	05-May-04	12	90[b]
LL11740	19-Apr-04	19	120[b]
LL11741(DUP)	19-Apr-04	20	120[b]
LL11555	09-Mar-04	6.4	250[b]
LL11556(DUP)	09-Mar-04	5.7	250[b]
LL11552	13-Feb-04	6.1	290[c]
LL11553(DUP)	13-Feb-04	5.5	290[c]
LL11548	14-Jan-04	15	250[b]
LL11549(DUP)	14-Jan-04	16	250[b]
LL11543	09-Dec-03	7.8	180[c]
LL11544(DUP)	09-Dec-03	7.8	180[c]
LL11380	05-Nov-03	10	70[c]
LL11381(DUP)	05-Nov-03	9.7	70[c]
LL11258	08-Oct-03	10	80[c]
LL11259(DUP)	08-Oct-03	10	80[c]
LL11205	09-Sep-03	9.7	110[c]
LL11206(DUP)	09-Sep-03	9.8	110[c]
LL11174	05-Aug-03	7.9	100[c]
LL11175(DUP)	05-Aug-03	8.2	100[c]
LL11127	09-Jul-03	16	50[b]
LL11128(DUP)	09-Jul-03	12	50[b]
LL11121	02-Jun-03	15	63[c]
LL11122(DUP)	02-Jun-03	16	63[c]
LL11118	14-Mar-03	4.7	325[c]
LL11119(DUP)	14-Mar-03	4.1	325[c]
LL11100	10-Apr-03	4.9	135[c]
LL11101(DUP)	10-Apr-03	4.9	135[c]
LL11078	17-Mar-03	3.8	300[b]
LL11079(DUP)	17-Mar-03	2.5	300[b]
LL11073	07-Feb-03	11	60[b]
LL11074(DUP)	07-Feb-03	11	60[b]
LL11066	10-Jan-03	8.9	150[b]
LL11067(DUP)	10-Jan-03	7.4	150[b]
LL10971	03-Dec-02	14	35[b]
LL10972(DUP)	03-Dec-02	14	35[b]

continued

Table 6. Post-Remediation PCB Results

Illinois Central Spring

Lemon Lane Landfill, Bloomington, Indiana

Sample ID	Sampling Date	PCB[a], ppb	Flow, gal/min
LL10966	12-Nov-02	4.7	80[b]
LL10967(DUP)	12-Nov-02	4.9	80[b]
LL10961	11-Oct-02	12	60[b]
LL10962(DUP)	11-Oct-02	13	60[b]
LL10945	04-Sep-02	22	30[c]
LL10946(DUP)	04-Sep-02	22	30[c]
LL10916	08-Aug-02	21	25[b]
LL10917(DUP)	08-Aug-02	20	25[b]
LL10898	07-Jul-02	19	50[b]
LL10899(DUP)	07-Jul-02	19	50[b]
LL10885	10-Jun-02	8.5	190[c]
LL10886(DUP)	10-Jun-02	9.2	190[c]
LL10863	21-May-02	7.9	280[c]
LL10864(DUP)	21-May-02	7.2	280[c]
LL10790	11-Apr-02	3.6	225[c]
LL10791(DUP)	11-Apr-02	3.8	225[c]
LL10766	14-Mar-02	4.8	300[b]
LL10767(DUP)	14-Mar-02	4.6	300[b]
LL10746	13-Feb-02	10	150[b]
LL10747(DUP)	13-Feb-02	9.3	150[b]
LL10725	22-Jan-02	21	20[b]
LL10726(DUP)	22-Jan-02	14	20[b]
LL10720	03-Jan-02	9.5	130[b]
LL10723(DUP)	03-Jan-02	14	130[b]
LL10466	19-Oct-01	5.7	139[b]
LL10467(DUP)	19-Oct-01	5.6	139[b]
LL10457	13-Sep-01	8.9	100[b]
LL10458(DUP)	13-Sep-01	8.8	100[b]
LL10452	17-Aug-01	11	15[b]
LL10453(DUP)	17-Aug-01	13	15[b]
LL10380	27-Jul-01	9.3	15[b]
LL10381(DUP)	27-Jul-01	8.8	15[b]
LL10352	14-Jun-01	13	125[b]
LL10353(DUP)	14-Jun-01	14	125[b]
LL10205	15-May-01	20	40[b]
LL10206(DUP)	15-May-01	17	40[b]
LL10144	11-Apr-01	14	240[b]
LL10145(DUP)	11-Apr-01	14	240[b]
LL10079	20-Mar-01	14	93[b]
LL10080(DUP)	20-Mar-01	15	93[b]
LL10061	27-Feb-01	2.9	280[b]
LL10062(DUP)	27-Feb-01	4.3	280[b]
LL10057	31-Jan-01	4.9	830[b]

continued

Sample ID	Sampling Date	PCB[a], ppb	Flow, gal/min
LL10058(DUP)	31-Jan-01	5.6	830[b]
LL10049	20-Dec-00	5.3	360[b]
LL10050(DUP)	20-Dec-00	5.2	360[b]
LL10043	17-Nov-00	8.3	160[b]
LL10044	17-Nov-00	8.5	160[b]

Table 6. Post-Remediation PCB Results

Illinois Central Spring

Lemon Lane Landfill, Bloomington, Indiana

[a] *Samples were analyzed to a detection limit of 0.1 parts per billion (ppb) for al PCB parameters except Aroclor 1221 (detection limit 0.2 ppb or 0.5 ppb). Other detection limits may occasionally result from non-normal sample volumes, dilutions, etc.*

[b] *Flow estimated visually.*

[c] *Flow estimated from ICS Treatment Facility instrumentation*

Table 7. Post-Remediation PCB Results
Slaughterhouse Spring
Lemon Lane Landfill, Bloomington, Indiana

Sample ID	Sampling Date	PCB[a], Date	Flow[b], gal/min
LL12000	14-Jun-04	< 0.1	2[c]
LL11558	09-Mar-04	< 0.1	23[c]
LL11545	09-Dec-03	< 0.1	13[c]
LL11260	08-Oct-03	< 0.1	3.5[c]
LL11124	02-Jun-03	< 0.1	25
LL11103	10-Apr-03	< 0.1	20
LL11081	17-Mar-03	< 0.1	50
LL11076	07-Feb-03	< 0.1	15
LL11069	10-Jan-03	< 0.1	20
LL10974	03-Dec-02	< 0.1	5
LL10969	12-Nov-02	< 0.1	8
LL10964	11-Oct-02	< 0.1	8
LL10947	04-Sep-02	< 0.1	2
LL10920	08-Aug-02	< 0.1	2
LL10904	17-Jul-02	< 0.1	5
LL10891	10-Jun-02	< 0.1	15
LL10869	21-May-02	< 0.1	50
LL10796	11-Apr-02	< 0.1	20
LL10769	14-Mar-02	< 0.1	10
LL10749	13-Feb-02	< 0.1	10
LL10728	22-Jan-02	< 0.1	4
LL10722	03-Jan-02	< 0.1	5
LL10469	19-Oct-01	< 0.1	12
LL10460	13-Sep-01	< 0.1	2
LL10455	17-Aug-01	< 0.1	3
LL10383	27-Jul-01	< 0.1	3
LL10355	14-Jun-01	< 0.1	8
LL10208	15-Mar-01	0.11	2
LL10147	11-Apr-01	< 0.1	5
LL10076	20-Mar-01	< 0.1	2
LL10064	27-Feb-01	< 0.1	25
LL10059	31-Jan-01	< 0.1	20
LL10051	20-Dec-00	0.13 J	15
LL10045	17-Nov-00	0.14 J	5

[a] Samples were analyzed to a detection limit of 0.1 parts per billion (ppb) for all PCB parameters except Aroclor 1221 (detection limit 0.2 ppb or 0.5 ppb). Other detection limits may occasionally result from non-normal sample volumes, dilutions, etc.

[b] Flow estimated visually.

[c] Flow measured by V-notch weir.

NR = Not reported

J = Estimated value. The QA/QC data indicated an analytical bias.

Table 8. Crest Gauge Data
Viacom, Inc.
Lemon Lane Landfill, Bloomington Monroe County, Indiana

Date	Piezometer AD Apparent Movement (ft)	Piezometer AS Apparent Movement (ft)	Piezometer BS Apparent Movement (ft)
11/14/02	None	None	None
12/02/02	None	None	None
12/13/02	None	None	None
12/30/02	None	None	None
01/13/03	None	None	None
01/28/03	None	[1]	None
02/11/03	None	[1]	None
02/20/03	None	None	None
03/05/03	None	None	None
03/21/03	None	None	None
04/07/03	None	None	None
04/23/03	None	None	None
05/08/03	None	None	None
05/19/03	0.45'	None	None
06/05/03	None	None	None
06/20/03	0.35'	None	None
07/02/03	None	None	None
07/16/03	1.35'	None	None
07/31/03	None	None	None
08/14/03	None	None	None
09/03/03	None	None	None
09/11/03	None	None	None
09/29/03	None	None	None
10/09/03	None	None	None
10/23/03	None	None	None

Date	Piezometer AD Apparent Movement (ft)	Piezometer AS Apparent Movement (ft)	Piezometer BS Apparent Movement (ft)	Piezometer BD Apparent Movement (ft)
11/07/03	None	None	None	[2]
11/26/03	None	None	None	[2]
12/08/03	None	None	None	[2]
12/31/03	None	None	None	[2]
01/15/04	0.46	None	None	[2]
02/04/04	None	None	None	[2]
02/13/04	None	None	None	[2]
03/02/04	None	None	None	[2]
03/12/04	None	None	None	None
04/09/04	None	None	None	None
04/23/04	None	None	None	None
05/10/04	None	None	None	0.28
05/21/04	None	None	None	None
06/10/04	None	None	None	None

Table 8. Crest Gauge Data continued

Viacom, Inc.

Lemon Lane Landfill, Bloomington Monroe County, Indiana

Date	Piezometer AD Apparent Movement (ft)	Piezometer AS Apparent Movement (ft)	Piezometer BS Apparent Movement (ft)	Piezometer BD Apparent Movement (ft)
06/24/04	None	None	None	None
07/12/04	None	None	None	None
07/29/04	None	None	None	None

[1] Crest gauge could not be removed from Piezometer AS on this date, possibly due to a build-up of ice in the PVC casing.

[2] Crest gauge was installed in PZ-BD on 3/8/2004; no readings are available prior to that date.